CHAPTER IV
SOCIO-ECONOMIC ASSESSMENT OF THE 1991 OCEAN SALMON FISHERIES

In general, the 1991 season brought lower prices and a smaller troll catch than 1990 resulting in a 37 percent drop in exvessel value for the coast. In inflation adjusted terms, this brought the total exvessel value down to a level more similar to that experienced during the years of the El Nino effect than to other fishing years. The total number of recreational trips taken on the West Coast decreased almost 24 percent in 1991 compared to 1990.

EXVESSEL PRICES AND VALUES FOR THE 1991 OCEAN TROLL FISHERY

Inseason Trends and Geographic Patterns

Monthly exvessel price data is provided to give the reviewer a sense of possible effects of seasonal trends in supply and demand on price (Tables IV-1, IV-2 and IV-3 for California, Oregon and Washington, respectively). Conclusions about seasonal shifts in markets should not be drawn solely on the basis of these data. Trends in average prices during the season may be the result of factors other than seasonal shifts in markets. For example, a price increase may reflect an increase in the proportion of large chinook landed rather than an increase in demand or decrease in supply. For this reason, prices are broken down by market category for Oregon and Washington. This break down is not available for California. While a market category break down begins to help in the detection of seasonal trends in markets, there are other factors, such as port of landing, which may also cause seasonal shifts in exvessel prices. Higher prices in certain ports may reflect a greater net value of the product when landed in the port, a redistribution of payments between sectors, or both. For example, in a particular port there may be a strong local market which places a high premium on fish "fresh off the boat," or fishermen may capture some of the tranrecreationalation costs by taking the product to a port closer to distribution centers.

Examination of the aggregated average exvessel prices reveals a mid-summer dip in prices for most chinook and California coho. The notable exception is Washington small chinook which jumped $0.13 a pound in July, then backed off $0.25 a pound in August. Washington and Oregon coho prices increased steadily through the season.

Annual Trends

Available information on salmon exvessel price and value by species, compiled from state fish tickets and expressed both in nominal terms and real 1991 dollars, is presented in Tables IV-4, IV-5 and IV-6. The GNP implicit price deflator, developed by the Bureau of Economic Analysis, is used to adjust nominal to real values (in 1991 the GDP implicit price deflator is used as a proxy for the 1990 to 1991 change). These tables and the following discussion refer to the non-Indian troll fishery in Council management areas and associated state territorial waters. Total exvessel value was $13.2 million, down 37 percent in real (inflation adjusted) terms compared to 1990 (excluding pink landings) and less than one-third of the 1976-1990 real dollar average (average excludes pinks). On the West Coast, significant pink salmon runs occur in odd-numbered years. The value of pink salmon was about one-half of one percent of the value of the total 1991 harvest and harvest was

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TABLE IV-1. Average monthly exvessel salmon price in dollars per dressed pound, for California, in 1991. (Page 1 of 1)

	May	June	July	Aug.	Sept.	Season
Chinook[a/]	2.63	2.70	2.47	2.42	2.63	2.58
Coho	-	1.64	1.35	1.29	1.39	1.52

a/ Chinook salmon are typically sold in 2 and sometimes 3 size categories. Prices paid in these categories are not extracted from dealer ticket information.

TABLE IV-2. Average monthly exvessel salmon price in dollars per dressed pound, for Oregon, in 1991. (Page 1 of 1)

Species/Grade	May	June	July	Aug.	Sept.	Oct.	Season
			CHINOOK				
Large (>11 Pounds)	2.94	2.79	2.52	2.56	2.71	2.81	2.70
Medium (7-11 Pounds)	2.77	2.50	2.12	2.15	2.32	2.39	2.32
Small (<7 Pounds)	2.67	2.44	1.88	2.05	2.26	2.31	2.18
Ungraded Chinook	3.08	2.80	2.24	2.41	2.29	2.68	2.62
Average	2.88	2.67	2.30	2.27	2.44	2.58	2.47
			COHO				
Mixed Coho	-	.95	.99	1.09	1.16	-	.99

TABLE IV-3. Average monthly non-Indian troll exvessel salmon price in dollars per dressed pound, for Washington, in 1991. (Page 1 of 1)

Species/Grade	May	June	July	Aug.	Sept.	Season
			CHINOOK			
Large (>11 Pounds)	2.75	2.63	2.47	2.42	2.44	2.66
Medium (8-11 Pounds)	2.52	2.39	2.14	2.17	2.21	2.45
Small (<8 Pounds)	2.28	1.93	2.06	1.81	1.71	2.13
Ungraded Chinook	2.61	-	-	2.16	2.24	2.52
			COHO			
Mixed Coho	-	-	1.06	1.11	1.16	1.13

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TABLE IV–4. Troll salmon landed in California, estimates of exvessel value and average price (dollars per dressed pound). (Page 1 of 1)

		Chinook				Coho				Total[a/]	
Year	GNP Price Deflator[b/]	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)
1979	57.2	17,356	30,343	2.53	4.42	2,303	4,026	2.19	3.83	19,659	34,369
1980	62.7	12,741	20,310	2.27	3.62	408	650	1.36	2.17	13,149	20,961
1981	68.7	13,417	19,538	2.25	3.28	905	1,318	1.94	2.83	14,322	20,856
1982	73.4	18,754	25,562	2.55	3.48	735	1,002	1.36	1.85	19,489	26,564
1983	75.6	4,290	5,676	2.09	2.76	318	421	1.25	1.65	4,608	6,096
1984	79.2	6,875	8,685	2.67	3.37	687	868	1.99	2.51	7,562	9,552
1985	81.4	11,390	13,999	2.56	3.15	125	154	1.57	1.93	11,515[d/]	14,152
1986	83.5	14,874	17,815	2.01	2.41	238	285	1.18	1.41	15,112	18,100
1987	86.1	25,130	29,176	2.78	3.23	493	572	0.02	2.32	25,623[e/]	29,748
1988	89.0	41,221	46,318	2.86	3.21	706	793	2.21	2.48	41,927	47,112
1989	92.7	13,095	14,132	2.39	2.58	390	421	1.69	1.82	13,485[f/]	14,553
1990	96.5	11,434	11,851	2.77	2.87	622	645	1.98	2.05	12,056	12,496
1991[g/]	100.0	8,289	8,289	2.58	2.58	696	696	1.52	1.52	8,984[h/]	8,985

a/ Does not include pink landings.
b/ Preliminary estimate based on the 1991 GDP price deflator.
c/ Expressed in 1991 dollars.
d/ Pink landings nominal exvessel value was $20,000. Nominal pink price per pound was $0.50.
e/ Pink landings nominal exvessel value was $2,500. Nominal pink price per pound was $1.38.
f/ Pink landings nominal exvessel value was $3,400. Nominal pink price per pound was $0.72.
g/ Preliminary.
h/ Pink landings nominal exvessel value was $109. Nominal pink price per pound was $0.59.

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TABLE IV–5. Troll salmon landed in Oregon, estimates of exvessel value and average price (dollars per dressed pound). (Page 1 of 1)

Year	GNP Price Deflator[b/]	Chinook				Coho				Total[a/]	
		Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)
1971	33.7	587	1,743	0.59	1.75	3,155	9,366	0.36	1.07	3,742	11,109
1972	35.1	982	2,794	0.75	2.13	2,476	7,044	0.51	1.45	3,458	9,838
1973	37.1	3,520	9,487	1.02	2.75	4,004	20,792	0.78	2.10	7,524	10,279
1974	40.4	2,412	5,977	1.05	2.60	5,525	13,690	0.76	1.88	7,937	19,667
1975	44.1	2,680	6,077	1.04	2.36	3,128	7,093	0.77	1.75	5,808	13,170
1976	46.4	3,410	7,353	1.77	3.82	11,458	24,706	1.26	2.72	14,868	32,058
1977	49.1	7,938	16,179	2.17	4.42	3,546	7,227	1.34	2.73	11,484	23,407
1978	52.6	3,584	6,808	1.89	3.59	3,756	7,135	1.35	2.56	7,340	13,943
1979	57.2	6,639	11,607	2.57	4.49	10,350	18,095	2.26	3.95	16,989	29,701
1980	62.7	5,259	8,383	2.42	3.86	2,926	4,664	1.34	2.14	8,185	13,048
1981	68.7	4,039	5,882	2.57	3.74	5,534	8,059	1.66	2.42	9,573	13,940
1982	73.4	6,094	8,306	2.59	3.53	3,801	5,181	1.40	1.91	9,895	13,487
1983	75.6	1,244	1,646	1.90	2.51	1,052	1,392	0.96	1.27	2,296	3,038
1984	79.2	1,477	1,866	2.74	3.46	118	149	1.66	2.10	1,595	2,015
1985	81.4	5,045	6,200	2.48	3.05	729	896	1.51	1.86	5,774[d/]	7,096
1986	83.5	5,976	7,185	1.77	2.12	1,978	2,369	1.04	1.25	7,954	9,527
1987	86.1	13,467	15,635	2.60	3.02	3,296	3,827	1.72	2.00	16,763[e/]	19,462
1988	89.0	13,940	15,664	3.19	3.58	7,596	8,535	2.28	2.56	21,536	24,199
1989	92.7	7,894	8,519	2.23	2.41	2,131	2,300	1.07	1.15	10,025[f/]	10,819
1990	96.5	5,627	5,832	2.58	2.67	1,014	1,051	1.60	1.66	6,641	6,883
1991[g/]	100.0	1,721	1,721	2.47	2.47	1,399	1,399	0.99	0.99	3,120[h/]	3,120

a/ Does not include pink landings.
b/ Preliminary estimate based on the 1991 GDP price deflator.
c/ Expressed in 1991 dollars.
d/ Pink landings nominal exvessel value was $168,000. Nominal pink price per pound was $0.65.
e/ Pink landings nominal exvessel value was $69,000. Nominal pink price per pound was $0.79.
f/ Pink landings nominal exvessel value was $13,000. Nominal pink price per pound was $0.74.
g/ Preliminary.
h/ Pink landings nominal exvessel value was $4,000. Nominal pink price per pound was $0.54.

TABLE IV-6. Non-Indian troll salmon landed in Washington, estimates of exvessel value and average price (dollars per dressed pound). (Page 1 of 1)

Year	GNP Price Deflator[b/]	Chinook				Coho				Total[a/]	
		Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)
1971	33.7	1,654	4,910	0.62	1.84	2,477	7,353	0.36	1.07	4,131	12,264
1972	35.1	1,709	4,862	0.76	2.16	1,959	5,573	0.58	1.65	3,668	10,435
1973	37.1	3,480	9,379	1.05	2.83	3,112	8,388	0.83	2.24	6,592	17,767
1974	40.4	3,794	9,401	1.00	2.48	4,272	10,586	0.76	1.88	8,066	19,987
1975	44.1	2,935	6,655	1.02	2.31	3,481	7,893	0.79	1.79	6,416	14,549
1976	46.4	6,034	13,011	1.59	3.43	7,790	16,797	1.25	2.70	13,824	29,807
1977	49.1	6,170	12,576	2.17	4.42	4,770	9,722	1.28	2.61	10,940	22,298
1978	52.6	4,872	9,255	2.35	4.46	5,153	9,789	1.84	3.50	10,025	19,043
1979	57.2	5,501	9,617	3.24	5.66	9,590	16,766	2.40	4.20	15,091	26,383
1980	62.7	3,989	6,359	2.62	4.18	3,125	4,981	1.59	2.53	7,114	11,340
1981	68.7	3,279	4,775	2.66	3.87	2,642	3,847	1.52	2.21	5,921	8,622
1982	73.4	4,246	5,787	2.57	3.50	2,484	3,386	1.34	1.83	6,730	9,173
1983	75.6	1,152	1,524	1.72	2.28	313	414	0.93	1.23	1,465	1,938
1984	79.2	255	322	2.78	3.51	155	196	1.48	1.87	410	518
1985	81.4	837	1,029	2.57	3.16	764	939	1.32	1.62	1,601[d/]	1,968
1986	83.5	808	968	2.35	2.81	367	440	1.16	1.39	1,175	1,407
1987	86.1	1,606	1,864	2.97	3.45	354	411	1.67	1.94	1,960[e/]	2,275
1988	89.0	2,289	2,572	2.95	3.31	48[f/]	54	2.45	2.75	2,337	2,626
1989	92.7	955	1,031	2.22	2.40	275	297	1.31	1.41	1,230[g/]	1,327
1990[h/]	96.5	890	922	2.57	2.66	758	786	1.52	1.58	1,648	1,708
1991[h/]	100.0	783	783	2.54	2.54	343	343	1.13	1.13	1,126[i/]	1,126

a/ Does not include pink landings.
b/ Preliminary estimate based on the 1991 GDP price deflator.
c/ Expressed in 1991 dollars.
d/ Pink landings nominal exvessel value was $308,000. Nominal pink price per pound was $0.55.
e/ Pink landings nominal exvessel value was $6,500. Nominal pink price per pound was $0.62.
f/ There was no legal coho fishery in 1988. This value is for landings of fish caught south of Cape Falcon and seizures of illegal fish.
g/ Pink landings nominal exvessel value was $91,000. Nominal pink price per pound was $0.70.
h/ Preliminary.
i/ Pink landings nominal exvessel value was $69,600. Nominal pink price per pound $0.47.

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virtually nonexistent in 1990. Trends in the exvessel value of salmon landings from 1976–1991 (chinook and coho only) are shown in Figure IV–1. Exvessel values approached those received during the El Nino years (1983 and 1984).

While the chinook harvest was down 42 percent to 397,900 fish, an increase in the average dressed weight of chinook caught off California resulted in a only a 37 percent drop in total pounds landed. The 63 percent increase in coho catch to 444,600 was partially offset by a decrease in average weights (Tables D–1, D–2 and D–3) with a net result being an increase in total dressed pounds landed of 50 percent (Tables IV–7, IV–8 and IV–9). As a result of a general decrease in prices, exvessel value for both species was down more than would be indicated by the total pounds landed. Total value of chinook landed was $10.8 million, down 42 percent in real terms compared to 1990 and down 66 percent in real terms compared to the 1979–1990 average. Total value of coho was $2.4 million, comparable to 1990 in real terms and down 71 percent compared to the 1979–1990 average.

California

The total exvessel value of the troll salmon harvest in California was close to $9.0 million, down 28 percent from the real 1990 exvessel value and 57 percent from the 1976–1990 real average (Table IV–4).

The 1991 California chinook harvest (294,700 chinook) dropped about 30 percent from 1990 (423,400 fish) (Table A–3). Average weights increased significantly, so that total pounds dropped only 22 percent. Average 1991 chinook prices decreased 10 percent compared to 1990 real prices, but were 19 percent below the 1979–1990 real dollar average. The net result of the decline in numbers of chinook harvested, increase in average weight and decrease in exvessel price was a 30 percent drop in the real exvessel value of the chinook harvest to $8.3 million. The 1991 real exvessel value was 59 percent below the 1979–1990 real value.

For coho, comparing 1991 with the 1990 harvests, an increase of 38 percent in terms of numbers of fish. However, with a harvest of only 83,900 fish in 1991 and average weights and prices far below that of chinook, coho are a much smaller part of the California salmon fishery than chinook. Real prices were down 26 percent with the net result being an 8 percent increase in the exvessel value of troll coho landings compared to 1990 (Table IV–4). The coho exvessel value of $696,000 was still 25 percent lower than the 1979–1990 real average.

Oregon

The total exvessel value of the troll salmon harvest in Oregon was $3.1 million, down 55 percent from the real 1990 harvest value and 79 percent from the 1976–1990 real average (Table IV–8). The pink harvest in 1991 was about than one–tenth of one percent of the 1991 total exvessel value. The chinook exvessel value declined 70 percent while the coho exvessel value increased 33 percent, compared to 1990. Chinook and coho exvessel values were 80 and 78 percent, respectively, below the 1976–1990 average real values.

Compared to 1990, the Oregon chinook harvest declined 68 percent to 74,600 fish and coho harvest increased 151 percent to 306,800 (Table A–8). Decreases in prices and average weights compounded

Figure IV-1. Exvessel value of troll chinook and coho landings (1991 dollars).

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TABLE IV-7. Estimates of California coastal community and state personal income impacts of the troll and recreational ocean salmon fishery for major port areas.[a/] (Page 1 of 1)

Year	Ocean Troll		Recreation	Local Personal Income	
	Chinook (pounds)	Coho (pounds)	Angler Days	Ocean Troll (dollars)	Recreational (dollars)
			CRESCENT CITY		
1976–1990	304,400	180,900	28,000	1,737,800	1,358,100
1990	20,100	400	42,700	87,200	1,992,500
1991[b/]	3,500	600	25,600	15,900	1,211,900
			EUREKA		
1976–1990	759,700	233,200	27,900	4,352,000	1,568,000
1990	132,800	14,600	38,600	616,300	2,148,100
1991[b/]	78,100	18,900	27,400	368,200	1,518,800
			FORT BRAGG		
1976–1990	1,600,800	178,000	12,200	8,007,000	670,800
1990	671,200	124,600	14,600	3,266,400	817,800
1991[b/]	465,600	54,400	22,600	2,021,600	1,290,500
			SAN FRANCISCO		
1976–1990	2,362,600	77,200	92,300	14,903,400	9,491,300
1990	1,891,800	142,000	89,700	9,842,000	8,202,200
1991[b/]	1,667,600	268,100	69,500	8,623,000	6,397,500
			MONTEREY		
1976–1990	1,139,800	237,300	22,600	6,898,900	1,452,300
1990	1,406,500	32,100	66,500	6,104,800	3,988,100
1991[b/]	1,001,600	116,900	50,800	4,382,500	3,709,400
			CALIFORNIA COASTAL COMMUNITY TOTAL[c/]		
1976–1990	6,167,400	906,700	182,900	35,899,100	14,540,500
1990	4,122,300	313,700	252,100	19,916,800	17,148,300
1991[b/]	3,216,400	458,900	195,900	15,411,100	14,128,000
			CALIFORNIA STATE TOTAL[d/]		
1976–1990	e/	e/	e/	50,744,200	15,948,400
1990	e/	e/	e/	24,142,900	19,953,000
1991[b/]	e/	e/	e/	18,487,500	15,505,500

a/ Expressed in 1991 dollars and excluding pink salmon.
b/ Preliminary.
c/ Income impacts on the coastal economy. Totals do not include impacts of 1 coastal community on another.
d/ The state totals are impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise have been expended in other sectors.
e/ Value identical to those for the coastal community totals.

TABLE IV-8. Estimates of Oregon coastal community and state personal income impacts of the troll and recreational ocean salmon fishery for major port areas.[a/] (Page 1 of 1)

Year	Ocean Troll Chinook (pounds)	Ocean Troll Coho (pounds)	Ocean Troll Pink (pounds)	Recreation[b/] Angler Days	Local Personal Income Ocean Troll (dollars)	Local Personal Income Recreational (dollars)
			ASTORIA			
1976–1990[c/]	85,200	192,600	–	33,700	1,193,800	2,137,100
1990[d/]	28,200	68,700	–	25,500	271,100	1,544,100
1991[d/]	8,800	68,900	300	21,700	159,800	1,301,100
			TILLAMOOK			
1976–1990[c/]	144,600	505,900	–	33,500	2,794,200	1,645,800
1990[d/]	139,000	271,600	–	33,500	1,137,100	1,658,000
1991[d/]	109,600	430,600	1,800	21,000	1,154,000	1,034,000
			NEWPORT			
1976–1990[c/]	516,100	762,600	–	74,400	5,973,800	4,050,400
1990[d/]	387,800	73,000	–	71,400	1,555,800	3,954,900
1991[d/]	261,000	439,600	2,800	53,200	1,711,700	2,915,900
			COOS BAY			
1976–1990[c/]	1,184,700	925,900	–	76,300	10,809,500	4,080,300
1990[d/]	1,451,800	196,500	–	65,000	5,782,200	3,442,700
1991[d/]	292,000	464,100	500	57,700	1,939,600	3,037,900
			BROOKINGS			
1976–1990[c/]	540,800	176,700	–	61,600	3,266,700	2,733,300
1990[d/]	174,300	24,000	–	51,100	643,100	2,239,400
1991[d/]	17,800	7,300	<50	36,400	69,900	1,592,500
			OREGON COASTAL COMMUNITY TOTAL[e/]			
1976–1990[c/]	2,471,400	2,563,700	–	279,400	24,038,000	14,647,000
1990[d/]	2,181,000	633,500	–	246,500	9,389,200	12,839,100
1991[d/]	695,200	1,410,600	5,400	190,000	5,035,100	9,881,500
			OREGON STATE TOTAL[f/]			
1976–1990[c/]	g/	g/	g/	g/	35,690,500	17,292,300
1990[d/]	g/	g/	g/	g/	13,889,000	15,220,000
1991[d/]	g/	g/	g/	g/	7,654,300	11,679,300

a/ Expressed in 1991 dollars.

b/ Astoria area includes Gearheart/Seaside and Cannon Beach; Tillamook area includes Garibaldi, Netarts and Pacific City; Newport area includes Depoe Bay and Salmon River; Coos Bay area includes Florence, Charleston, Winchester Bay and Bandon; and Brookings area includes Port Orford and Gold Beach.

c/ Pinks not included.

d/ Preliminary.

e/ Income impacts on the coastal economy. Totals do not include impacts of 1 coastal community on another.

f/ The state totals are impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise have been expended in other sectors.

g/ Value identical to those for the coastal community totals.

TABLE IV-9. Estimates of Washington coastal community and state personal income impacts of the non-Indian troll and recreational ocean salmon fishery for major port areas.[a/b/]
(Page 1 of 1)

Year	Ocean Troll			Recreation	Local Personal Income	
	Chinook (pounds)	Coho (pounds)	Pink (pounds)	Angler Days	Ocean Troll (dollars)	Recreational (dollars)
			NEAH BAY/LA PUSH			
1976-1990[c/]	232,100	509,300	-	40,200	3,797,500	2,578,590
1990	162,700	205,900	0	25,700	1,147,500	1,389,000
1991	135,000	103,200	107,300	19,700	813,500	1,063,800
			WESTPORT			
1976-1990[c/]	590,700	615,800	-	113,600	4,765,100	9,815,300
1990	130,400	208,100	0	69,300	1,084,600	5,555,300
1991	125,600	122,100	17,700	52,700	766,600	4,095,300
			ILWACO			
1976-1990[c/]	126,800	257,900	-	81,400[d/]	1,218,200	4,356,400
1990	10,500	27,700	0	67,800[e/]	113,200	3,035,900
1991	7,500	26,100	<100	45,500[f/]	80,600	2,082,100
			OTHER WASHINGTON COASTAL AREAS			
1976-1990[c/]	18,700	8,500	-	-	139,900	-
1990	12,800	37,600	0	-	155,200	-
1991	8,000	21,800	1,000		201,700	-
			WASHINGTON COASTAL COMMUNITY TOTAL[g/]			
1976-1990[c/]	999,200	1,395,700	-	235,200[d/]	9,920,800	16,750,300
1990	316,400	479,300	0	162,900	2,500,500	9,980,600
1991	276,200	273,200	126,000	117,900	1,862,500	7,241,200
			WASHINGTON STATE TOTAL[h/]			
1976-1990[c/]	NA	NA	NA	i/	NA	NA
1990[j/]	345,800	499,100	-	i/	3,427,100	15,077,143
1991[j/]	308,300	303,500	146,900	i/	2,490,300	10,609,100

a/ Expressed in 1991 dollars.
b/ Does not include angler days in state-managed fisheries (Buoy 10 and Area 4B add-on recreational fishery).
c/ Pinks not included.
d/ Includes effort expended in Buoy 10 area fishery by Washington-based anglers through 1986.
e/ Includes 3,600 angler days on the north side of the north Columbia River jetty.
f/ Includes 4,600 angler days on the north side of the north Columbia River jetty.
g/ Income impacts on the coastal economy (Puget Sound is not included). Totals do not include impacts of 1 coastal community on another.
h/ The state totals are impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise been expended in other sectors.
i/ Values identical to those for coastal community totals.
j/ The differences between pounds landed in the coastal community and pounds landed in the state are attributed to Puget Sound landings.

C-069052

to create a more severe decrease in chinook exvessel value and reduce the increase in coho exvessel value from what would have been expected, given the change in numbers of fish harvested.

Washington

The real exvessel value of the non-Indian ocean troll chinook and coho fishery off Washington declined 34 percent to $1.1 million (Table IV-6). The decrease was only 29 percent if the 1991 pink catch is included in the comparison. Compared to 1990, the total number of chinook landed (28,800) and coho landed (54,300) were down 7 and 40 percent, respectively. Coho prices decreased 28 percent while chinook prices remained fairly stable. Average weights generally declined (Table D-3). The net result was a decrease in chinook and coho exvessels value of 15 and 56 percent, respectively.

TRENDS IN NUMBERS OF VESSELS AND REVENUE PER VESSEL

Coastwide, 3,791 vessels took part in the salmon ocean troll fishery. This was 17 percent less than the number of vessels active in 1990 and 29 percent less than the number of vessels active in 1989 (permits were held for 6,404 vessels, close to 9 percent fewer than in 1990). Numbers of vessels active in California, Oregon and Washington declined 17, 22 and 10 percent, respectively (comparisons of 1991 with 1990 data in Tables D-4, D-5 and D-6). The ratio of active vessels to permits declined by a few percent in Oregon and Washington and by about 9 percent in California.

Comparing 1991 performance to 1976-1990 real dollar averages, California total exvessel revenue was 57 percent lower than the average, while per vessel exvessel revenue was only 25 percent lower than the average. Oregon total exvessel revenue was 79 percent lower than the average, while per vessel exvessel revenue was 56 percent lower than the average. For Washington, a 1978-1990 average is available for comparison. Washington total exvessel revenues were 83 percent below the average, while per vessel exvessel revenues were 58 percent below the average. While per vessel exvessel revenues have not declined as much as total exvessel revenues, some care must be taken in using these results to assess the general health of firms within the troll industry. For example, when considering a constant total harvest, if the vessels which left the industry were low producers, the average harvest may be increased substantially with relatively minor effects on the per vessel harvest of those who rely more on the fishery. Also, these numbers are for vessel deliveries by state. To the extent that vessels deliver in more than one state and the proportions of vessels participating in more than one state change, the assessment of changes in average per vessel exvessel revenues will be off. A more detailed analysis of per vessel revenues is necessary to assess the full implication of these results.

Historical information on landings by vessel size, percentages of the fleet responsible for the majority of harvest and harvest by residence of vessels participating in the fishery off each state is provided in Appendix D.

COLUMBIA RIVER GILLNET FISHERY

Harvests in the ocean salmon fisheries impact inriver fisheries in terms of increased or decreased fishing opportunity. Information is presented below and in Table IV-10 on the exvessel value of inriver commercial harvest of Columbia River chinook, coho and chum in 1991. All prices and values in the tables and the following discussion are in real (inflation adjusted) dollars.

TABLE IV-10. Exvessel values (expressed in 1991 dollars per landed pound) of inriver commercial harvest of Columbia River salmon, 1989, 1990 and 1991.[a/b/] (Page 1 of 1)

Fishery	Species	Average Price Per Pound[c/] (dollars) 1989	1990	1991	Exvessel Value (dollars) 1989	1990	1991
			OREGON				
Non-Indian Gillnet	Chinook						
	Spring	3.50	3.49	3.52	642,600	773,500	558,700
	Fall	0.87	1.29	1.08	1,788,800	784,500	443,300
	Tules	0.28	0.42	0.24	92,400	28,000	27,000
	Coho	0.93	1.21	0.80	1,484,400	375,300	1,327,500
	Chum	0.51	0.32	0.40	1,900	2,100	500
	TOTAL				4,010,200	1,963,400	2,357,000
Treaty Indian All Gears	Chinook						
	Spring	–	3.11	3.51	–	100	200
	Fall	0.72	1.26	0.90	730,600	923,000	148,900
	Tules	0.27	0.36	0.20	18,700	23,600	30,000
	Coho	0.65	0.83	0.66	2,900	3,200	14,500
	TOTAL				725,769	905,919	193,600
			WASHINGTON				
Non-Indian Gillnet	Chinook						
	Spring	3.78	3.52	3.57	460,800	430,900	348,000
	Fall[d/]	0.70	1.19	0.97	500,000	317,000	217,700
	Coho	0.93	1.30	0.82	1,101,800	236,600	773,600
	Chum	–	0.62	0.39	–	4,100	1,400
	TOTAL				2,062,700	988,500	1,340,600
Treaty Indian All Gears[e/]	Chinook						
	Spring	2.16	–	–	28,300	–	–
	Fall[c/f/]	0.69	1.04	0.63	1,338,400	1,059,900	430,400
	Coho	0.65	1.04	0.66	25,100	10,400	15,100
	TOTAL				1,295,503	1,032,574	445,500
Columbia River Total					8,217,000	4,972,200	4,336,800

a/ Preliminary.
b/ Excluding pinks.
c/ Gillnet exvessel salmon prices are recorded in round weight and therefore are not strictly comparable to exvessel troll prices.
d/ Includes fall brights, tules and jacks. Price change may reflect a change in the mix of brights, tules and jacks rather than annual price changes.
e/ Includes Drano Lake (Little White Salmon River north), Priest Rapids Pool and Klickitat dipnet fisheries.
f/ Includes catches in June and July.

Exvessel prices for inriver gillnet catches of chinook vary considerably with race (spring versus fall chinook) and stock (tules versus brights). In general, the 1991 prices were down compared to 1990. The primary exceptions were the reported prices for chum landed in Oregon and spring chinook which increased. The total 1991 exvessel value for salmon harvested in the Columbia River was $4.3 million, over 10 percent below the 1990 harvest value and less than one-sixth the value of the 1988 harvest.

KLAMATH RIVER GILLNET FISHERY

The Yurok and Hoopa tribes had no commercial inriver fisheries in 1991. The Yurok, Hoopa and Karuk Indians all have subsistence fisheries in the Klamath River basin.

ASSESSMENT OF THE 1991 OCEAN RECREATIONAL FISHERY

The total number of recreational trips taken on the West Coast decreased 24 percent, from 658,000 in 1990 to 499,000 in 1991. Figure IV-2 shows the break down of total number of trips by state. Recreational salmon fishing takes place primarily in one of two modes: (1) anglers fishing from privately owned pleasure craft and (2) anglers employing the services of the charter boat fleet. Tables IV-11, IV-12 and IV-13 present the ocean recreational salmon effort and catch by mode for recent years.

California

The total number of trips taken in California decreased in 1991 but remained above the 1979-1990 average (Table IV-11). There was an increase of over 50 percent in Fort Bragg and the greatest proportional reduction in participation occurred in Crescent City and Eureka (Table A-4). The average 1991 chinook success rate for all angler trips decreased to 0.4 chinook (down slightly compared to 1990 and down over 45 percent compared to 1989) the coho success rate increased to 0.35 coho per day with the net result being no change in the salmon per day success rates in 1991 compared to 1990. However, this success rate is still the lowest observed since 1981.

Oregon

Ocean recreational trips in Oregon were down 23 percent compared to 1990 activity. Proportionally, the number of charter trips declined slightly more than the number of private trips (Table IV-12). The greatest reduction in observed trips occurred in the Tillamook area. The second the largest decline in absolute terms occurred in the Brookings recreational salmon fishery. Chinook success rates remained low while the increase in coho success rates lead to the highest combined recreational salmon success rate over the last ten years (Table A-9).

Washington

In 1991, Washington ocean recreational salmon trips were down about a third compared to the 1979-1990 average and about 29 percent below the 1990 activity level (Table IV-13). The charter vessel trips were off slightly more, proportionally, than the private vessel trips. Proportionally, the greatest reduction in number of trips occurred in the Ilwaco recreational fishery.

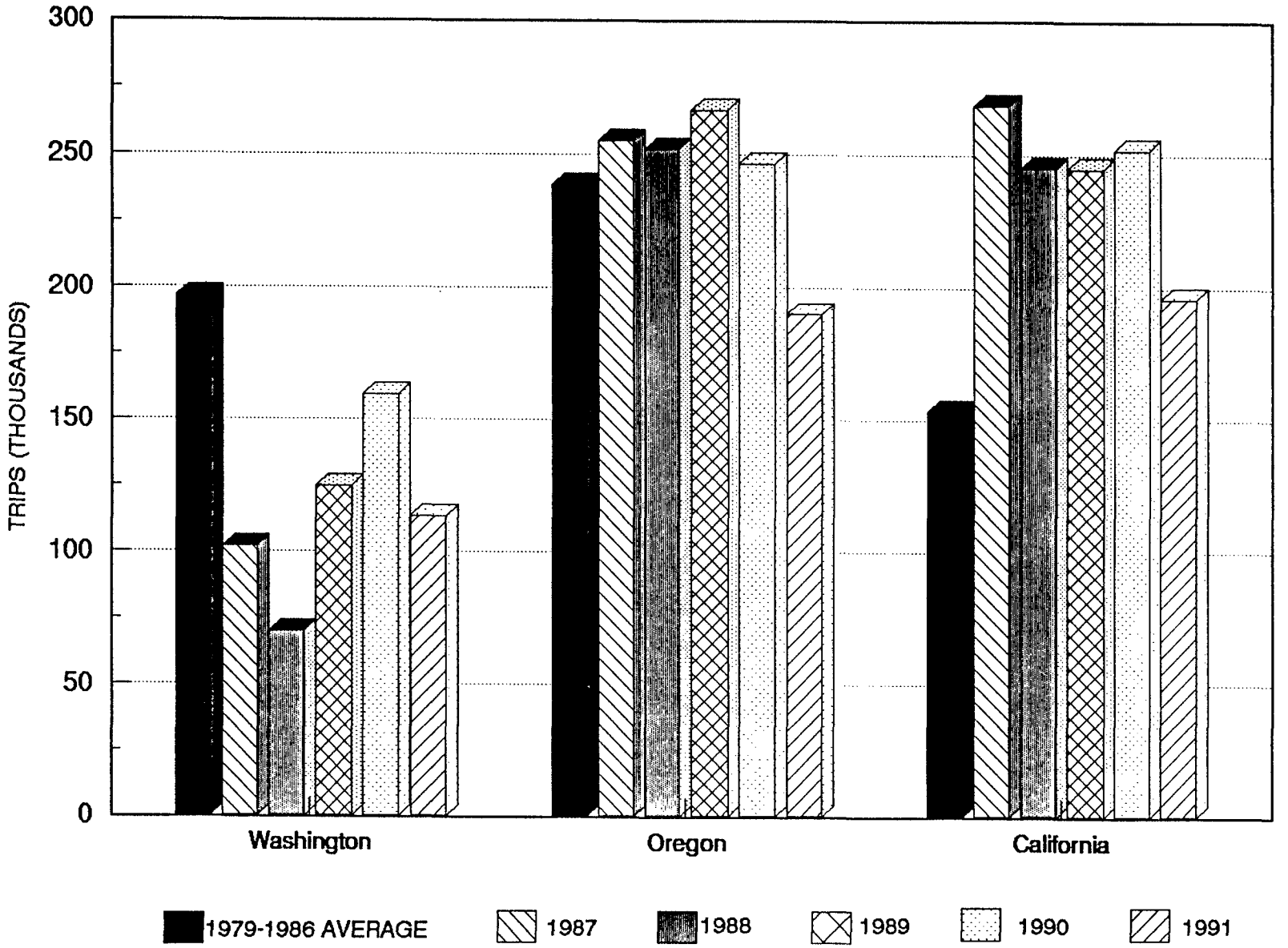

Figure IV-2. Total recreational ocean salmon trips by state, 1987-1990 and 1979-1986 average.

C-069056

TABLE IV-11. California ocean recreational salmon catch in thousands of fish and effort in thousands of angler trips by boat type.[a/] (Page 1 of 1)

	Angler Trips		Chinook Catch		Coho Catch	
Year	Charter	Private	Charter	Private	Charter	Private
1979-1990	80.3	106.2	84.0	47.2	2.8	25.2
1971-1975	102.5	139.3	105.5	64.1	12.2	36.1
1976	75.3	107.0	50.6	30.4	15.3	42.6
1977	80.7	101.9	54.7	49.6	2.4	11.8
1978	52.8	103.0	42.0	34.1	3.6	41.0
1979	78.7	85.2	71.8	40.6	2.0	14.5
1980	69.2	79.1	62.9	22.5	1.7	20.4
1981	61.1	66.9	59.6	24.2	0.2	9.5
1982	80.4	90.1	102.0	47.2	1.6	22.8
1983	46.2	65.4	44.8	17.3	0.2	26.7
1984	57.6	66.0	69.7	19.6	0.2	18.2
1985	87.9	97.7	96.8	63.8	0.9	14.4
1986	86.4	109.2	86.5	55.1	2.2	16.5
1987	105.0	163.3	121.8	70.7	4.3	43.0
1988	104.6	140.8	109.1	62.3	3.5	31.2
1989	108.0	137.0	105.0	81.7	6.2	43.4
1990	78.4	173.7	78.3	61.6	10.2	41.5
1991[b/]	68.6	127.4	39.9	40.6	13.3	55.8

a/ Includes only San Francisco area charter boats from 1981-1985.
b/ Preliminary.

C-069057

TABLE IV-12. Oregon ocean recreational salmon catch in thousands of fish and effort in thousands of angler trips by boat type.[a/] (Page 1 of 1)

	Angler Trips		Chinook Catch		Coho Catch	
Year	Charter	Private	Charter	Private	Charter	Private
1979–1990	55.3	188.9	6.4	25.2	62.5	136.2
1979	73.7	187.7	5.4	13.3	59.8	101.8
1980	79.0	218.9	5.1	11.9	98.3	207.5
1981	65.4	242.6	6.6	22.2	64.5	135.3
1982	43.3	182.7	8.2	30.6	48.5	126.7
1983	41.9	184.1	4.7	20.0	39.7	107.2
1984	24.3	128.7	2.2	14.8	27.3	96.1
1985	53.4	198.2	9.2	46.6	60.2	122.8
1986	43.7	142.8	4.0	18.4	71.1	140.5
1987	60.9	194.1	14.1	44.5	60.7	116.8
1988	63.0	189.0	7.5	30.9	73.1	153.3
1989	60.2	206.4	4.1	27.9	85.2	187.1
1990	55.3	191.2	5.1	21.4	61.4	138.9
1991[b/]	40.3	149.7	1.9	12.4	68.8	190.3

a/ Salmon data from surveyed ports only. These include Astoria, Garibaldi, Depoe Bay, Newport, Winchester Bay, Coos Bay and Brookings. Since 1981, Pacific City and Florence have also been included. Gold Beach data are included from 1981–1987.

b/ Preliminary.

TABLE IV–13. Washington ocean recreational salmon catch in thousands of fish and effort in thousands of angler trips by boat type.[a/b/] (Page 1 of 1)

Year	Angler Trips		Chinook Catch		Coho Catch		Pink Catch	
	Charter	Private	Charter	Private	Charter	Private	Charter	Private
1979–1990[c/]	99.4	69.7	32.9	12.4	123.2	73.4	–	–
1979	220.8	89.8	61.1	15.7	227.9	62.4	9.4	8.3
1980	193.9	86.2	41.1	12.5	288.4	73.1	0.1	–
1981	162.2	74.6	62.8	21.7	182.4	55.5	4.6	5.6
1982[c/]	131.9	86.8	85.8	21.0	124.0	82.5	–	–
1983[c/]	123.0	90.4	39.1	9.5	122.6	89.2	0.7	3.8
1984[c/]	29.8	46.9	7.7	7.4	38.5	49.6	–	–
1985[c/]	65.5	62.5	17.4	10.8	98.6	80.3	1.9	1.2
1986	56.5	53.0	13.3	7.9	98.0	77.7	–	–
1987	53.7	48.3	27.6	12.9	65.8	58.6	0.4	1.4
1988	32.5	37.4	11.2	7.8	46.1	43.6	–	–
1989	58.6	65.9	11.2	8.1	95.2	94.5	0.3	1.2
1990	64.9	94.4	16.6	13.0	90.9	113.6	–	–
1991[d/]	43.7	69.6	5.0	7.3	80.2	111.6	0.1	0.5

a/ Source: Washington ocean salmon sampling program.
b/ Numbers do not include angling from the north side of the north Columbia River jetty.
c/ Values for 1982–1985 include some inriver Columbia River fishing after closure of the ocean fishery.
d/ Preliminary.

In addition to the ocean trips, ocean quota supported 4,700 trips on the north side of the north Columbia River jetty. Trip success rates for chinook were off and the lowest seen over the last 10 years while the increase in coho catch resulted in one of the highest combined salmon success rate over the last 10 years.

Partial week closures were designed to encourage increased participation of anglers in non-salmon recreational fishing as well as extend the salmon season. Table IV-14 provides data on type of angler trips, by port, for 1984-1991. Although 1984 regulations did not include weekly closures, they were very restrictive, forcing users to choose between fishing for alternative species or pursuing nonfishing related activities during the longer than usual closure periods that summer. The policy of maintaining a Sunday through Thursday recreational fishery was maintained in 1991.

In general, the number of bottomfish recreational trips taken out of Washington Columbia River ports has decreased compared to earlier years (except for fishing from the bank), while numbers of trips taken out of Westport, Neah Bay, and La Push have remained fairly stable since the major increases which occurred in 1986 (for Westport) and 1987 (for Neah Bay and La Push).

Assessment of the 1991 State Managed Buoy 10 and Area 4B Add-on Fisheries

In 1991, anglers (including bank anglers) made 168,900 trips to the Buoy 10 fishery. This was a 121 percent increase compared to 1990 (Table IV-15). The number of charter and private trips on both sides of the river increased substantially as well as the number of reported bank trips. Success rates of vessel based trips in Buoy 10 increased dramatically, bringing the combined chinook and coho success rate to 1.3 fish per day (up from 0.31 fish per day in 1990). In 1991, Neah Bay benefited from an additional 9,200 trips taken in Area 4B, after the ocean fishery was closed (Table IV-15). This was about 3,000 trips less than were taken in 1990.

INCOME IMPACTS OF THE 1991 OCEAN TROLL AND RECREATIONAL FISHERIES

Coastal community impacts are presented, in order to address concerns about the effects of regulations on local economies as expressed in the Magnuson Fishery Conservation and Management Act and Regulatory Flexibility Act.

Interpretation of State and Coastal Community Income Impacts

Estimated state and community income impacts of commercial and recreational ocean salmon fisheries and selected state-managed fisheries are shown in Tables IV-7 through IV-9 and Tables IV-16 through IV-17. The impacts presented are in terms of changes in total personal income generated in adjacent coastal or Columbia River counties, or the state as a whole. Income impact estimates are based on the landings in the area, an inventory of the fleet and processors and surveys of the expenditure patterns of recreational fishermen. Ocean harvest which is not landed in the coastal area (e.g., landed in Puget Sound) is not included in the community impacts, but is included in the state impacts.

Discussions of the methods for calculating income impacts are included in the Council's annual reviews of the salmon season for 1988 and 1989. Readers unfamiliar with these methods are encouraged to refer to these reviews in order to correctly interpret the impact estimates provided here. The numbers presented here are estimates of annual trends, the possible redirection of money from

TABLE IV-14. Washington recreational salmon, bottomfish and sturgeon angler trips by port and boat type. (Page 1 of 1)

Year	Columbia River[a/]					Westport			La Push			Neah Bay		
	Charter	Private	Subtotal	Jetty	Total	Charter	Private	Total	Charter	Private	Total	Charter	Private	Total
						SALMON EFFORT (thousands of trips)								
1984	18.0	36.0	54.0	–	–	11.6	2.3	13.9	0.0	0.2	0.2	0.3	8.3	8.6
1985	23.0	35.3	58.3	–	–	42.2	13.7	55.9	0.0	1.5	1.5	2.0	15.2	17.2
1986	27.4	63.2	90.6	–	–	36.6	14.8	51.4	0.0	1.7	1.7	2.4	17.4	19.8
1987	27.7	82.8	110.5	5.1	15.6	34.1	9.8	43.9	0.0	2.0	2.0	1.9	17.8	19.7
1988	24.8	100.2	125.0	9.1	134.1	23.5	13.9	37.4	0.0	2.8	2.8	2.0	14.8	16.8
1989[b/]	26.9	112.7	139.6	14.3	153.9	40.8	18.7	59.5	0.0	1.6	1.6	2.8	25.5	28.3
1990[b/c/]	23.2	86.7	109.9	7.5	117.5	43.4	25.9	69.3	0.0	4.2	4.2	3.0	30.8	33.8
1991[c/]	25.4	112.1	137.4	21.7	159.2	28.6	24.2	52.7	0.2[d/]	3.3	3.5	1.9	23.5	25.4
						BOTTOMFISH (thousands of trips)								
1984	2.1	0.1	2.2	–	–	12.4	0.5	12.9	0.0	–	–	1.8	12.3	14.1
1985	1.8	0.2	2.0	–	–	15.3	1.0	16.3	0.0	0.1	0.1	3.0	10.6	13.6
1986	1.6	0.1	1.7	–	–	19.6	0.8	20.4	0.0	0.2	0.2	3.5	11.4	14.9
1987	1.5	0.3	1.8	0.5	2.3	21.1	1.2	22.3	0.0	0.5	0.5	5.6	16.0	21.6
1988	2.1	0.2	2.3	0.8	3.1	24.4	1.1	25.5	0.0	0.7	0.7	5.7	14.8	20.5
1989	1.2	0.5	1.7	1.5	3.2	19.3	1.0	20.3	0.0	0.6	0.6	6.8	16.3	23.1
1990[c/]	1.4	0.3	1.7	2.4	4.1	21.8	0.8	22.6	0.0	0.8	0.8	6.4	18.1	24.6
1991[c/]	0.8	0.4	1.2	1.8	3.0	23.5	1.1	24.6	0.0	0.9	0.9	5.9	18.2	24.0
						STURGEON EFFORT (thousands of trips)								
1984	1.7	6.5	8.2	–	–	–	–	–	–	–	–	–	–	–
1985	3.4	8.3	11.7	–	–	–	–	–	–	–	–	–	–	–
1986	3.5	8.3	11.8	–	–	–	–	–	–	–	–	–	–	–
1987	4.7	11.2	15.9	–	–	–	–	–	–	–	–	–	–	–
1988	5.2	7.2	12.4	–	–	–	–	–	–	–	–	–	–	–
1989	3.5	6.1	9.6	–	–	–	–	–	–	–	–	–	–	–
1990[c/]	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–
1991[c/]	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–

a/ Columbia River effort includes river (Buoy 10) effort.
b/ Includes Washington Area 4B add-on recreational salmon fishery.
c/ Preliminary.
d/ This represents Neah Bay charter boats fishing in La Push.

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TABLE IV-15. Buoy 10 and Area 4B add-on recreational salmon catch and angler trips by boat type. (Page 1 of 1)

Year	Angler Trips			Chinook Catch			Coho Catch			Pink Catch	
	Charter	Private	Bank	Charter	Private	Bank	Charter	Private	Bank	Charter	Private
OREGON BUOY 10[a/]											
1986[b/]	34,638		4,377	5,220		48	40,625		2,297	0	0
1987	3,829	38,131	3,884	1,557	11,556	41	2,244	13,318	203	0	0
1988	7,318	50,992	3,917	1,255	8,525	38	7,658	35,688	979	0	0
1989[c/]	3,882	38,445	4,252	303	3,920	21	2,906	18,792	995	0	0
1990[c/]	917	21,812	4,063	52	1,482	17	343	4,260	581	0	0
1991	3,956	44,370	6,884	321	2,674	26	6,519	54,004	3,003	0	0
WASHINGTON BUOY 10											
1986[b/]	56,517		6,658	10,259		73	71,911		5,589	2	11
1987	9,845	63,851	5,054	3,610	25,188	148	5,651	24,607	1,147	0	9
1988	17,839	94,534	8,842	2,847	18,051	54	18,208	78,767	2,117	0	6
1989[c/]	10,708	82,803	8,367	936	10,661	59	7,790	45,624	2,613	3	30
1990[c/]	3,764	41,852	4,003	222	3,371	5	1,454	11,259	538	0	0
1991	11,882	84,765	17,064	1,082	7,378	68	20,072	117,950	5,952	0	63
TOTAL BUOY 10											
1986[b/]	91,155		11,035	15,479		121	112,536		7,886	2	11
1987	13,674	101,982	8,938	5,167	36,744	189	7,895	37,925	1,350	0	9
1988	25,157	145,526	12,759	4,102	26,576	92	25,866	114,455	3,096	0	6
1989[c/]	14,590	120,483	12,619	1,239	14,581	80	10,696	64,416	3,608	3	30
1990[c/]	4,681	63,664	8,066	274	4,853	22	1,797	15,519	1,119	0	0
1991	15,838	129,135	23,948	1,403	10,052	94	26,591	171,954	8,955	0	63
TOTAL AREA 4B ADD-ON											
1989[d/]	1,238	10,572	–	67	385	–	2,278	17,603	–	71	423
1990	962	11,283	–	57	359	–	1,974	18,312	–	0	0
1991	553	8,684	–	31	349	–	1,064	14,068	–	86	1,457

a/ Private effort and catch data includes the Clatsop Spit bank fishery.
b/ Prior to 1987, data on charter and private anglers were combined.
c/ Does not include the Chinook/Hammond fishery.
d/ There was no Area 4B add-on fishery in 1986, 1987 or 1988.

TABLE IV-16. Local personal income impacts of the commercial salmon gillnet fishery on Oregon and Washington Columbia River communities, 1989, 1990 and 1991. (Page 1 of 1)

	Species	Pounds			Local Personal Income Impact in Dollars[a/]		
		1989	1990	1991[b/]	1989	1990	1991[b/]
				OREGON			
Non-Indian	Chinook						
Gillnet	Spring	176,800	221,400	158,600	1,020,000	1,220,400	861,200
	Fall	1,970,200	618,900	409,300	4,018,600	1,391,700	830,900
	Tules	319,600	65,800	110,400	347,600	58,600	75,100
	Coho	1,537,600	309,200	1,757,600	2,508,800	666,400	3,146,100
	Chum	3,200	3,200	1,200	3,300	2,200	900
	TOTAL	4,007,900	1,218,100	2,437,100	7,898,300	3,339,300	4,914,200
Indian	Chinook						
All Gears	Spring	-	<50	100	-	200	540
	Fall	1,010,800	725,800	166,400	1,865,400	1,609,900	301,200
	Tules	69,000	62,200	148,300	74,400	47,100	94,900
	Coho	1,500	3,800	21,900	2,500	7,000	36,100
	TOTAL	1,081,400	791,800	336,700	1,942,400	1,664,100	432,800
				WASHINGTON			
Non-Indian	Chinook						
Gillnet	Spring	113,000	122,300	97,500	610,500	675,600	529,300
	Fall[c/]	660,600	265,900	224,400	1,092,800	599,800	451,100
	Coho	1,100,100	182,600	943,400	1,965,600	417,800	1,726,400
	Chum	-	6,500	3,500	-	7,300	2,600
	TOTAL	1,873,700	577,347	1,268,800	3,668,900	1,693,200	2,706,800
Indian	Chinook						
All Gears[d/]	Spring	12,200	-	-	65,700	-	-
	Fall[c/]	1,795,700	1,022,500	683,200	2,970,700	2,151,800	1,134,139
	Coho	35,900	10,000	22,900	64,100	20,400	37,316
	TOTAL	1,843,700	1,032,600	706,100	3,100,500	2,172,200	1,171,500
				TOTALS			
Non-Indian		5,881,600	1,795,500	3,705,900	11,567,200	5,032,500	7,620,900
Indian		2,955,100	1,842,404	1,042,800	5,611,300	3,357,300	3,139,500
Columbia River		8,806,700	3,613,462	4,748,700	16,610,000	8,868,800	9,225,200

a/ Expressed in 1991 dollars.
b/ Preliminary.
c/ Includes fall brights, tules and jacks.
d/ Includes Drano Lake (Little White Salmon River north), Priest Rapids Pool and Klickitat dipnet fisheries.

TABLE IV-17. Local personal income impacts of the Buoy 10 recreational fishery in Oregon and Washington and the Area 4B add-on fishery in Washington.[a/] (Page 1 of 1)

Year	Total Angler Trips[b/]	Income Impacts[c/]		
		Oregon	Washington	Total
		BUOY 10		
1987	124,600	2,405,500	3,247,300	5,652,800
1988	183,400	3,333,700	5,057,300	8,391,000
1989	147,700	2,443,800	4,127,000	6,570,800
1990	76,400	1,363,100	1,992,500	3,355,600
1991	168,921	2,875,700	4,637,700	7,513,400
		AREA 4B ADD-ON		
1989[d/]	11,800	-	644,200	644,200
1990	12,200	-	661,600	661,600
1991	9,200	-	496,800	496,800

a/ Because charter and private angler statistics are combined for 1986, no attempt was made to estimate 1986 income impacts.
b/ Including angler effort from the bank.
c/ Expressed in 1991 dollars.
d/ There was no Area 4B add-on fishery in 1987 or 1988.

C-069064

nonfishing dependent to fishing dependent sectors, and are likely an upper bounds of local community and state income impacts which may have been generated by 1991 salmon fishing activities. All income impact numbers in this review are reported in real (inflation adjusted) 1991 dollars.

Coastal Community and State Level Income Impacts by Area

For coastal county residents dependent on income from the ocean commercial salmon fishery, 1991 was another poor year with estimated total income impacts declining by 32 percent from $31.8 million for 1990 to the $22.3 million estimated for 1991. For those dependent on the ocean recreational fishery, there was a 22 percent decline in estimated income impacts as compared to 1990 (from $40.0 million to $31.3 million). The total state level income impact, aggregated for all 3 states, was $66.4 million for the recreational and troll ocean fisheries combined down 28 percent compared to 1990 levels and 58 percent compared to the 1976–1990 average. Relative to the 1976–1990 average, the declines related to the troll and recreational fishery were 72 and 34 percent, respectively.

California

In California, the estimated 1991 coastal area personal income generated as a result of salmon trolling decreased by 22 percent (compared to the 1990 estimate) to $18.5 million (Table IV–7). Crescent City and Eureka were hit hard leaving them with estimated income impacts of 99 and 92 percent, below the 1976–1990 average, respectively. In Fort Bragg, the drop relative to this historic average was about 75 percent and with lesser but significant reductions occurring in more southern ports.

On the recreational side, relative to the 1976–1990 historic average, the decreases in the northern ports were moderate (not more than 10 percent) with increases occurring in Fort Bragg and Monterey. There was a significant decrease in recreational activity out of San Francisco. Estimated income impacts for that area dropped by about one–third. Relative to 1990, San Francisco, Eureka and Crescent City experienced reduction of between 20 and 40 percent, while the decrease in Monterey was only 7 percent and there was close to a 60 percent increase in Fort Bragg.

Oregon

Overall, the estimated Oregon coast personal income generated by troll fishing fell 46 percent from $9.4 million in 1990 to $5.0 million in 1991 (Table IV–8). Troll related income impacts fell in every port except for Tillamook and Newport which benefitted from a heavy coho harvest. The income impacts for the Brookings area were down almost 90 percent relative to 1990 and 98 percent relative to the 1976–1990 average.

Recreational income impacts in every port dropped between 10 and 40 percent, with the largest proportional decrease occurring in the Tillamook area. In 1991, Brookings was 42 below the 1976–1990 average, farther below this average than any other port.

Washington

The estimated total state personal income generated in Washington by the non–Indian troll fleet was $2.5 million. This estimate was 27 percent below the estimate for the 1990 fishery (including pink salmon landings) and 84 percent below the 1976–1990 average (Table IV–9). The decrease was similar for the coastal areas (all landings excluding those made in Puget Sound). Proportionally, the

decrease was evenly spread across the three specified coastal ports with an increase occurring in "other areas".

Estimated recreational state level income impacts decreased about thirty percent from $14.5 million in 1990 to $10.6 million in 1991. This was about 55 percent below the 1976–1990 average.

The Washington combined troll and recreational ocean salmon related state income impact estimate was 29 percent below that estimated for 1990 and 67 percent below the 1976–1990 average.

INCOME IMPACTS OF SELECTED 1991 INSIDE SALMON FISHERIES

Columbia River Gillnet Income Impacts

The gillnet fishery on the Columbia River generates a substantial amount of community income to the Oregon and Washington communities on the Columbia River. While there was a slight increase in the estimated local community income impacts in 1991, impacts remained far below the levels estimated for 1987 and 1988 (Table IV–16). The entire increase in total income impacts is attributable to the non–Indian catch. Non–indian catch more than doubled, primarily as a result of a large increase in the coho catch. The treaty Indian catch was off, with a large drop in the chinook fall bright catch not being completely offset by the increase in coho catch, either in terms of pounds or total income impacts.

Buoy 10 Income Impacts

The number of Buoy 10 trips more than doubled in 1991 as compared to 1990. The increase in trips taken from the Washington side was slightly larger than that taken from the Oregon side in both proportional and absolute terms. The estimated local community income impacts increased to $7.5 million for both states combined (Table IV–17). Estimated impacts for the Area 4B add–on fishery declined by about 25 percent.